

REMARKS

Claims 1-20 are pending in the Application.

Claims 1-20 stand rejected.

I. REJECTION UNDER 35 U.S.C. 102(b)

Claims 1-20 were rejected by the Examiner under 35 U.S.C. 102(b) as being anticipated by Chou (U.S. Patent No. 5,772,905).

The Examiner asserted that “Chou teaches the claimed template with the second state (14,16) and the first state (20), the template having a pattern with protrusions and recessions, the template being made from silicon dioxide (col. 4, lines 47-49)”. This is the entirety of the Examiner’s argument.

A. Chou

In response, Applicant asserts that at col. 4, lines 8-12, Chou teaches:

“FIG. 1A shows a mold 10 having body 12 and molding layer 14. Molding layer 14 is shown as including a plurality of features 16 having a desired shape. A substrate 18 carries thin film layer 20.”

Further, Chou teaches that mold 10 is pressed into thin film layer 20 (see, for example col. 4, lines 14-16). Still further, Chou teaches that after removal of mold 10, thin film layer 20 includes a plurality of recesses formed at compresses regions 24 which generally conform to the shape of features 16 (see, for example col. 4, lines 27-29).

Yet further, Chou teaches:

“Thin film layer 20 comprises a thermoplastic polymer (col. 4, line 50). During the compressive molding step shown in FIG. 1B, thin film 20 is heated at a temperature to allow sufficient softening of the film relative to the mold. For example, above the glass transition temperature the polymer has a low viscosity and can flow, thereby conforming to the features 16.”

Chou discloses that in one experiment, thin film layer 20 was PMMA (col. 4, lines 57-col. 5, line 14). After heating mold 10 and PMMA 20 above the glass transition temperature, mold 10 and feature 16 were compressed against thin film 20 and held until the temperature dropped below the glass transition temperature.

B. Chou does not teach a material transitioning between thin film layer 20 and molding layer 14.

Applicants assert that Chou does not teach a material transitioning between thin film layer 20 and one or both of molding layer 14 and its features 16, as the Examiner appears to assert with the association of the “second state” with reference numeral 14 and the association of the “first state” with reference numeral 20. In contrast, Chou teaches that molding layer 14 is part of a first element, namely mold 10, and thin film layer 20 is carried on a second element, namely substrate 18. Thus, layers 14 and 20 are not part of the same element. Therefore it is unclear what would undergo a transition between molding layer 14 and thin film layer 20. Furthermore, Chou teaches that molding layer 14 and thin film layer 20 are made out of different materials. For example, Chou teaches that layer 14 and features 16 may be made of silicon dioxide (col. 4, line 48), while thin film layer 20 comprises a thermoplastic polymer, for example PMMA (col. 4, lines 50 and 56). Further, Chou teaches that layer 14 molds (which inherently means that it remains firm) while both mold 10 and layer 20 are heated to a temperature high enough that the material of thin film layer 20 flows and conform to features 16 (col. 4, lines 65-67). Moreover, layer 14 and thin film layer 20 appear to be required to be made of different materials in order for the teachings of Chou at col. 4, lines 65-67 to be accomplished.

In contrast, Applicants’ originally filed independent claims 1 and 9 each recite “upon said conformable material transitioning between first and second states.” Further, Applicants’ originally filed claim 17 recites “changes of said conformable material between said first and second phase states.”

Applicants assert that to be conformable a material need not be conformable in both first and second states. For example, when the first state is liquid and the second state is solid, as recited in dependent claim 2, the conformable material is

conformable in the first, liquid, state. Applicants further note that “state” is a term well-known in the chemical arts to refer to thermodynamic state, such as temperature, pressure, volume, and the like and/or phase state, such liquid, solid, and the like. This meaning is exemplified by Applicants’ claims 2, 10, and 18 and paragraph [0083] of Applicants’ specification. It is a property of a given material. Thus, the first and second states [first and second [phase states] recited in claims 1 and 9 [claim 17] are clearly states of the same conformable material.

For the foregoing reasons, Applicants respectfully assert that independent claims 1, 9 and 17 are neither anticipated by nor rendered obvious by Chou and therefore are patentable over Chou.

Further, Applicants respectfully assert that claims 2-8, depending from claim 1; claims 10-16, depending from claim 9; and claims 18-20, depending from claim 17, are likewise neither anticipated nor rendered obvious by Chou and therefore are patentable over Chou.

C. Chou does not teach a template having features and/or a pattern having dimensions compensating for a volumetric change of a conformable material.

Furthermore, Applicants respectfully assert that Chou does not teach a template having features and/or a pattern having dimensions compensating for a volumetric change of a conformable material. In contrast, Chou teaches the opposite, namely that thin layer 20 conforms well to features 16, without disclosed compensation. For example, Chou discloses at col. 5, lines 7-10: “It was found that the preferred pressure is about 1900 psi. At that pressure, the pattern of the features 16 can be fully transferred into the PMMA.” Likewise, at col. 5, lines 33-37 Chou discloses: “Furthermore, scanning electron microscopy of the PMMA patterns and the mold showed that the lateral feature size and the smoothness to the sidewalls of PMMA patterns fabricated using the present invention conform with the mold.”

In contrast, Applicants’ originally filed independent claims 1 and 9 recite “with said original dimensions differing from said designed dimensions sufficient to compensate for volumetric changes of said conformable material.” Further,

Applicants originally filed independent claim 17 recites "with said first dimensions being established to compensate for volumetric changes of said conformable material". Thus, Applicants respectfully assert that independent claims 1, 9 and 17 are neither anticipated by nor rendered obvious by Chou and therefore are patentable over Chou.

Further, Applicants respectfully assert that claims 2-8, depending from claim 1; claims 10-16, depending from claim 9; and claims 18-20, depending from claim 17, are likewise neither anticipated nor rendered obvious by Chou and therefore are patentable over Chou.

II. CONCLUSION

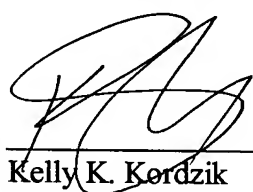
As a result of the foregoing, it is asserted by Applicants that the remaining Claims 1-20 in the Application are in condition for allowance, and respectfully request an early allowance of such Claims.

Applicants respectfully request that the Examiner call Applicants' attorney at the below listed number if the Examiner believes that such a discussion would be helpful in resolving any remaining problems.

Respectfully submitted,

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